ABSTRACT

A virtual condition assessment instrument measures the condition of the equipment and includes a data capture subsystem for sampling a set of analog signals and converting them into digital signals, a model-based component to estimate disturbances and to predict an expected response, a signal-based component to process output from the model-based component, a classification component to process output from the signal-based component, a fuzzy logic expert component to combine information from the classification component and, the model-based component in order to assess the condition of the equipment, and a condition assessment panel to display the condition of the equipment. The a virtual end-of-life prediction instrument predicts the equipment end-of-life and includes a condition prediction end-of-life prediction component to analyze information from the virtual condition assessment instrument to predict condition and end-of life, a prediction condition and end-of-life uncertainty estimation component to estimate the uncertainty of the condition and end-of-life prediction, and an end-of-life panel for displaying the condition and end-of-life prediction and uncertainty.